By me, for me: Acquiring ownership through creation

by

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Abstract

Previous research has shown that people's judgments about who owns an object depend on the amount and type of labor involved in acquiring it. While informative about the influence of labor on the acquisition of *existing* objects, little is known about how ownership judgments are made for objects that are *created* out of non-owned materials. The current studies investigated whether people judge that creation confers ownership, and how an agent's intent influences people's ownership judgments. Experiment 1 revealed that people view creation as conferring ownership, but that ownership is not established when an agent's attempt to create fails. Experiment 2 revealed that creators own objects that they create intentionally, but not objects that they create without intent. Experiment 3 revealed that people consider true creation to be the result of intentional actions, and that those responsible for true creation are granted ownership at higher rates than those viewed as only having modified an existing object. The similar pattern of responses in previous research about labor involving acquiring objects and the current research on labor involving creating objects suggests that a general notion of labor could underlie people's ownership judgments.

Keywords: ownership judgments, labor, creation

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We live in a world of human-made creations, from the shoes on our feet to the Great Wall of China. Without these creations we would sip water from cupped hands, eat with our fingers, walk barefoot, and we would never experience the beauty of art. The importance of human-made creations is exemplified by their ubiquity in all forms of human society.

Creators have a privileged status in relation to their creations. First, an object's physical characteristics are determined by its creator. Second, the creator of an object determines what kind of thing it is (Bloom, 1996; Gelman & Bloom, 2000). Even two-year-olds acknowledge this. For example, they decide whether a drawing depicts a balloon or a lollipop, by considering what the creator of the drawing intended the drawing to depict (Bloom & Markson, 1998). Third, the creator of an object also establishes its function (Rips, 1989; Matan & Carey, 2001; Kelemen & Carey, 2007; but see Malt & Johnson, 1992). When deciding the function of an object, like adults, even six-year-olds privilege the function intended by the object's creator (e.g., a pot used for making tea) over factors such as the function for which the object is currently used (e.g., watering flowers; Matan & Carey, 2001).

A further outcome of creation may be ownership; the creator of an object may view herself as its owner. Others may heed her entitlement to ownership as well. A woman who carves a block of wood into a cup may come to own the cup. Likewise, a man who chisels a rock into an arrowhead may come to own that arrowhead. The idea that creation establishes ownership is consistent with accounts holding that mixing one's labor with materials confers ownership over them (Locke, 1690/1978) because creation requires labouring on materials.

Previous research suggests that laypeople's judgments about ownership are broadly consistent with the labor theory (Friedman, 2010; Palamar, Le, & Friedman, 2012). For example, participants judged that a precious gem jutting out of a cliff does not necessarily belong

to the first person to spot it, nor to the first person to physically possess it, but rather to the first one who succeeds in dislodging it (Friedman, 2010). This suggests that labor alone is not sufficient to establish ownership; rather, one must labor *successfully* to become an owner. As such, creating an object might be an exemplary case of labor because creation typically provides evidence for successful labor.

Nonetheless, for several reasons, it is uncertain whether people judge that creation confers ownership. First, before creating an object, people typically possess the materials used to create it. Before creating the cup, the woman will need to possess the wood, just as the man creating the arrowhead will need to possess the rock. So perhaps they own their creations because they already own the materials out of which they are formed. On this view, creation cannot confer ownership if creation is preceded by ownership. This critique of the creation account has been applied to labor accounts of ownership acquisition more broadly (e.g., Waldron, 1988, pp. 173-174).

Second, although some studies suggest that labor confers ownership, these studies examined situations where agents labored to make an inaccessible object available, such as the rare gem described above (Friedman, 2010), or a feather stuck in a cactus (Palamar et al., 2012). But it is uncertain whether people approach ownership with a general theory of labor, which they apply both to cases of making inaccessible objects available and to cases of creation. Hence, these studies are uninformative about whether people view creation as conferring ownership, and so it remains unknown whether people view other forms of labor (e.g., labor involved in creation) as conferring ownership.

A third reason for uncertainty is that evidence of creation's influence on ownership judgments is both mixed and limited. Some studies have examined the effects of creation on

ownership judgments in the context of *transfers* of ownership. In one study, participants were told a story of a man who borrowed a piece of wood belonging to someone else, and carved it into a statue worth $100 (Hook, 1993). Participants judged that the original owner still owned the wood even after it was turned into a statue. Laboring on someone else's object was deemed insufficient for transferring ownership of the object[1].

In another study, children and adults swapped clay animals with an experimenter, and either remodelled each other's clay into a different shape, cut a small piece with a plastic knife, or simply held it for a brief period of time (Kanngiesser, Gjersoe, & Hood, 2010). Although 3- and 4-year-olds claimed that the clay animals now belonged to the people who remodelled them, most adults claimed that they still belonged to the original owners. Hence adults do not judge that creating an object causes ownership to be transferred away from the original owner to the creator. However, it should be noted that the study of ownership transfer differs from the goal of the present studies. In examples involving ownership transfer, the objects are already owned, whereas the present studies deal with acquiring ownership over objects that did not even *exist* prior to being created.

Only one study has examined whether creation establishes ownership over non-owned objects (Beggan & Brown, 1994). Participants read a story about a boy who either simply played with a tree branch or carved it into the shape of an airplane. He then left the branch where he found it, and returned later to find it in someone else's possession. When told that the boy carved the branch into an airplane, participants were more inclined to grant him ownership than when told he simply played with it. However, these ownership judgments did not favor the boy at rates

[1]However, when asked how to divide the profit if the statue was sold, participants allocated just over half of the earnings to the one who carved it. Despite rewarding his labor with a share of the profit, the borrower was not granted ownership of the statue.

exceeding chance. Thus, no known studies have demonstrated whether creation establishes ownership over non-owned objects.

The Place of Intent in Ownership

If creation does confer ownership, we might reasonably expect knowledge of the creator's intent to influence ownership judgments. One reason to expect this is that intent impacts ownership judgments in cases where agents labored to make an inaccessible object available. For example, participants were more likely to grant ownership to an agent who made an object available (e.g., by knocking a pineapple out of a tree) when the agent intended this outcome than when this outcome was an unintended consequence (Palamar et al., 2012). Given that intent matters in cases involving laboring for possession, it may also matter in cases involving laboring for creation. Because little is known about the relation between how people view these two kinds of labor, understanding the influence of intent should shed light on the commonalities or differences between the two.

Another reason to expect that intent will influence ownership judgments is that objects that are made unintentionally may not be viewed as creations at all (Bloom, 1996; Bloom & Markson, 1998; Gelman & Ebeling, 1998; Diesdendruck, Markson, & Bloom, 2003). For example, when told that a painting was made intentionally, children labelled the items depicted in it (e.g., by calling the painting 'a bear'). However, when shown a painting said to be created by accident, children would often refer to the literal contents (e.g., by calling it "paint"). Adults show the same tendency (Gelman & Ebeling, 1998). These findings suggest that people are less likely to view the modification of objects (e.g., by spilling paint on a canvas) as an act of creation if intent is missing. As such, people may not grant ownership to a creator when she acts without intent.

The current studies explore whether laboring to create objects leads to similar ownership judgments as found in previous work investigating laboring to acquire objects. Beyond asking if creation leads to ownership, we also wish to determine under what conditions this occurs. Three experiments were conducted to explore the factors that influence laypeople's ownership judgments for created objects. Vignettes were presented to participants that involved two characters arguing over an object. In each vignette, one character either succeeded or failed to create an object, and a different character (the "first possessor") physically claimed the object before the creator. Experiments 1A and 1B revealed that ownership is granted to an individual who succeeds in creating an object, but not when the individual fails. Experiment 2A and 2B revealed that ownership is more likely to be granted to a creator who acts intentionally. Finally, Experiments 3A and 3B demonstrated that ownership judgments are influenced by how a creator's actions are perceived: Participants side more with an agent who is seen as creating an object than one who is seen as modifying an object. These findings suggest that true creation is judged to confer ownership, but that acting with intent is a necessary component of true creation. The influence of intent on ownership judgments suggests that people may have a general notion of labor that applies not only to object acquisition, but to object creation as well.

Experiment 1A

Method

Participants. Fifty-two participants (18 males, aged 18-65 years, mean = 35 years, standard deviation = 11 years) were recruited and tested using online testing software (Crowdflower and Qualtrics). Participants located throughout the United States were paid $0.25 for completing the task, which took approximately 2-3 minutes. To ensure that the study was only taken once per participant, restrictions were placed that prevented identical Worker IDs and/or IP addresses from participating. This restriction not only prevented individuals from participating in the same study more than once, but also disqualified them from all subsequent experiments. An additional 22 participants were excluded from the final analysis for failing comprehension questions. These questions were designed to ensure that participants were reading the passage carefully; this same process of data removal was applied in all subsequent experiments.

Materials and Procedure. Participants were assigned to read one of two stories presented on their computers. On a screen preceding the story, participants were instructed to read the story carefully and to respond to the questions that follow. Participants clicked a button to access each new screen, meaning that each participant determined the pace of the study. Each story appeared on a screen along with the key question, "Who does the [object] belong to?" with both characters' names immediately below. After choosing who the object belongs to, participants proceeded to a new screen, where they were asked to indicate their level of confidence in their response, with options ranging from 1 (not confident at all) to 5 (very confident). Then, on a new screen following the confidence scale, participants received 4 comprehension questions (see Appendix). The order of questions remained fixed in all

conditions (however, the order of response options was counterbalanced). Participants were unable to revert to previous screens once a new screen was accessed.

Both stories described a man named Mike, who was at a landfill trying to create a novelty ashtray by crushing a metal can. Mike succeeded in creating the ashtray in one story, but failed in the other. After Mike's attempt to create the ashtray (whether successful or not), another man named Dave picked it up before Mike was able to. Participants were randomly assigned to read either the Successful Creation or the Failed Creation story. Text that differed between the two versions is in brackets.

> People sometimes visit a local landfill looking for things that can be salvaged and sold. Mike is on a large hill at the landfill. He sees a big metal can 20 feet away. Mike decides to crush it into an ashtray. However, crushing the can just right won't be easy. He picks up a heavy rock, walks a little bit closer, and throws it at the can. The rock [crushes the can into an ashtray/completely misses the can]!
>
> Mike walks towards the [ashtray/can]. Before he reaches it, a gust of wind sends it rolling down the hill. Mike walks down to get it. When he gets to the bottom, he sees that another man named Dave has picked it up. The two argue about who gets to keep the [ashtray/can].

Results and Discussion

If participants view creation as leading to ownership, they should strongly support the Creator when his attempt to create succeeds, but not when it fails. If participants do not view creation as leading to ownership, they should side with the Creator at similar rates in both conditions.

To test these predictions, we combined the two measures used to assess ownership judgments (i.e., character choice and confidence rating). We subtracted 0.5 from each confidence rating, and then multiplied the value by +1 for choices favoring the Creator and by -1 for choices favoring the First Possessor. Subtracting 0.5 from the rating score generated a more sensitive continuous measure to analyze ownership judgments than if this calculation was not performed. For example, if one participant favored Dave and had a confidence score of 1, and another participant favored Mike with the same degree of confidence, their two judgment scores would be -1 and +1 respectively, prior to subtracting 0.5 from each. This would result in a difference of 2 points. However, subtracting 0.5 from each score would result in -0.5 and +0.5, which is only a difference of 1 point. This scoring procedure yielded a response scale ranging from -4.5 (maximum support for first possessor) to +4.5 (maximum support for the Creator). The scoring method was based on Tenney, MacCoun, Spellman, and Hastie (2007), and was used in all subsequent experiments.

Results are depicted in the left half of Figure 1. Participants were more likely to attribute ownership to the Creator when his attempt to create was successful (78% of responses, $M = 1.98$, $SD = 2.98$) as compared to when his attempt failed (36% of responses, $M = -1.02$, $SD = 3.14$), $t(50) = 3.54$, $p = .001$. When creation succeeded, participants sided with the Creator; their scores exceeded the chance score of 0, one-sample t-test, $t(26) = 3.46$, $p = .002$. In contrast, when creation failed, support for the Creator decreased. In fact, judgments appeared to lean *away* from the creator, one-sample t-test, $t(24) = 1.63$, $p = .12$. These findings suggest that ownership is granted to successful creators, but not to those who fail to create.

However, in this experiment, success was conflated with physical contact. When the Creator succeeded, his rock also made contact with the can; however, when the Creator failed to

create, his rock never made contact. So rather than supporting successful creation, participants' responses may have been driven by the creator's physical contact with the object. The next experiment was conducted to rule out this possibility. In the following experiment, participants read stories where the creator's rock always made contact with the object regardless of whether creation succeeded or failed.

Experiment 1B

Method

Participants. Sixty-three participants (31 males, aged 19-61 years, mean = 33 years, standard deviation = 11 years) were recruited using Crowdflower. An additional 23 participants were excluded from the final analysis for failing comprehension questions.

Materials and Procedure. The study design was similar to Experiment 1A, except now physical contact with the object of interest was achieved in both stories. In the successful creation story, Mike crushed the can into an ashtray, just as he planned. In the failed creation story, Mike dented the can, but did not create the ashtray as he planned. Participants were randomly assigned to one of two conditions. As in Experiment 1A, each version of the story ended with the key question, "Who does the [object] belong to?" The structure of the survey (i.e., confidence rating, comprehension questions) remained the same as in the previous experiment. Text that differs between the two versions is in brackets.

> People sometimes visit a local landfill looking for things that can be salvaged and sold. Mike is on a large hill at the landfill. He sees a big metal can 20 feet away. Mike decides to crush it into an ashtray. However, crushing the can just right won't be easy. He picks up a heavy rock, walks a little bit closer, and throws it at the can. The rock [crushes the can into an ashtray/dents the can, but does not crush it]!
>
> Mike walks towards the [ashtray/dented can]. Before he reaches it, another man named Dave runs over and picks it up. The two argue about who gets to keep the [ashtray/dented can].

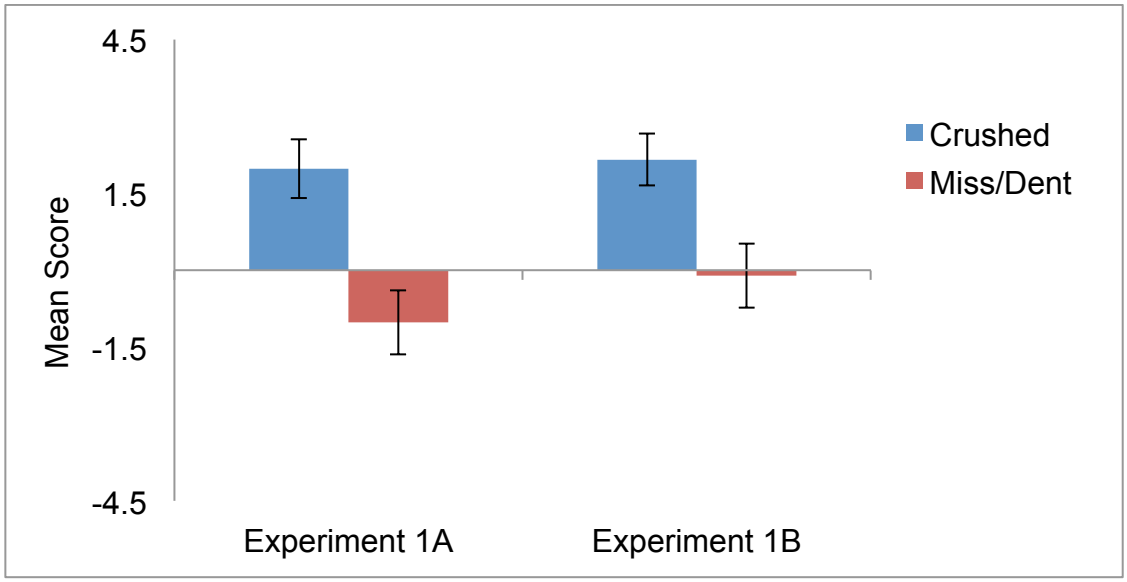
Results and Discussion

If creation is necessary to bestow ownership, then participants should be more likely to side with the Creator when creation is successful than when contact is made but creation is unsuccessful. However, if contact suffices to bestow ownership, then participants should select the Creator at equal rates across conditions. Using the same scoring procedure as the previous experiment, scores for the creation and contact-only conditions were compared.

Results are depicted in the right half of Figure 1. When creation was successful, participants were more inclined to attribute ownership to the Creator (78% of responses, M = 2.16, SD = 2.87) compared to when contact was made but creation was unsuccessful (45% of responses, M = -0.11, SD = 3.49), $t(58) = 2.81$, $p = .007$ (corrected for violating Levene's test for equality of variance). The Creator was selected at rates above chance when creation was successful, one sample t-test, $t(31) = 4.23$, $p < .001$, but not in the story where creation failed, one sample t-test, $t(30) = -0.18$, $p = .86$. These findings suggest that successful creation bestows ownership to the Creator, but contact alone (without creation) is insufficient to establish ownership.

The findings so far suggest that creation does in fact confer ownership. The next experiments examined whether intent has an influence on ownership judgments as well.

Figure 1. Experiment 1. Mean ownership rating scores calculated by multiplying character selection (-1 for first possessor, +1 for Creator) by confidence rating, and subtracting 0.5. Scores range from -4.5 (full support for first possessor) to +4.5 (full support for Creator). Error bars represent one standard error of their respective means.



Experiment 2A

The above studies show that people judge creation confers ownership. In previous research involving cases of laboring to acquire objects, intent had an impact on ownership judgments. That is, a person who makes an inaccessible object available is only judged to own it if her actions were intentional. Because creation is also a form of labor, it is possible that it is influenced by intent as well. The current study seeks to determine if intent influences ownership judgments for created objects.

Method

Participants. Sixty-six participants (37 males, aged 17-63 years, mean = 30 years, standard deviation = 10 years) were recruited using Crowdflower. An additional 24 participants were excluded from the final analysis for failing comprehension questions.

Materials and Procedure. Participants were randomly assigned to read either a story in which Mike throws paint at a wooden board because he wants to make a painting (i.e., Mike acts with intent), or a story in which he throws paint just for fun (i.e., Mike acts without intent). In contrast to the previous studies, Mike succeeds in his actions in both scenarios. Each version of the story ended with the key question, "Who does the [object] belong to?" The remainder of the survey followed the same structure as the previous experiments. Text that differs between the two conditions is in brackets.

> People sometimes visit a local landfill looking for things that can be salvaged and sold. Mike is on a large hill at the landfill. He sees a wooden board. Mike picks up a half empty paint can and throws it at the board [to make a splatter painting/ just for the fun of it]. The paint splatters all over the board. The [painting/painted board] looks surprisingly good. Suddenly, a gust of wind causes the

[painting/painted board] to roll down the hill. Mike wants the [painting/painted board].

Another man named Dave is walking at the bottom of the hill. He sees the [painting/painted board] on the ground and picks it up. When Mike reaches the bottom of the hill, they begin to argue about who gets to keep it.

Results and Discussion

If intent is necessary for creation to confer ownership, participants should be more likely to side with Creator when he intends to create than when he lacks intention. Results are depicted on the left side of Figure 2. Participants granted ownership more when the Creator acted intentionally (91% of responses, $M = 3.04$, $SD = 2.11$) than when he acted without intent (65% of responses, $M = 1.44$, $SD = 3.51$), $t(47.9) = 2.22$, $p = .03$ (corrected for violating Levene's test). Although support for the Creator differed across conditions, participants in both the intent and no-intent conditions granted ownership to the Creator at rates above chance, $t(34) = 8.55$, $p < .001$, and $t(30) = 2.28$, $p = .03$, respectively. These findings suggest that creation bestows ownership, but that intention dramatically increases support for the Creator.

This study demonstrated the influence of intent in ownership judgments for created items. However, a potential variable that may have affected decisions in this and previous experiments could be how the object was labelled. For example, when Mike successfully crushed the can in Experiment 1B, participants were asked to determine who the ashtray belonged to; when he failed, participants were asked to indicate who the dented can belonged to. Likewise, depending on the condition in the current experiment, participants were either asked who the "painting" belonged to, or who the "painted board" belonged to. Perhaps there is an implicit assumption that a "painted board" is qualitatively different from a "painting" with respect to its value or

scarcity. This potential difference could account for participants siding with the Creator at different rates across conditions. The next experiment sought to address this alternative possibility.

Experiment 2B

Method

Participants. One hundred and twenty-nine participants (48 males, aged 17-65 years, mean= 37 years, standard deviation= 11 years) were recruited using Crowdflower. An additional 30 participants were excluded from the final analysis for failing comprehension questions.

Materials and procedure. As in the previous study, participants read stories in which an agent's action caused a board to be painted, either because the agent intended the board to be a painting, or without this intention. In the previous experiment, this comparison was confounded with an identity and label change—in the intent condition, the painted board was referred to as a painting whereas in the no-intent condition it was simply referred to as a painted board. Hence, in the current study we added a third condition, in which the object was intentionally changed, but retained its original description (i.e., the board was intentionally painted, but was referred to as a "painted board" instead of as a "painting"). If intent is an important factor in ownership judgments, then we should not expect ratings to differ between the two intent stories, despite the use of different object labels.

Participants were randomly assigned to one of three conditions: intent-to-create (painting label), no intent-to-create (painted board label), and intent-to-modify (also painted board label). Each story ended with the key question, "Who does the [object] belong to?" The remainder of the survey followed the same structure as the previous experiments. Text that differed between the three versions is in brackets.

> People sometimes visit a local landfill looking for things that can be salvaged and sold. Mike is on a large hill at the landfill. He sees an ugly wooden board. Mike picks up a half empty paint can and throws it at the board [to make a splatter

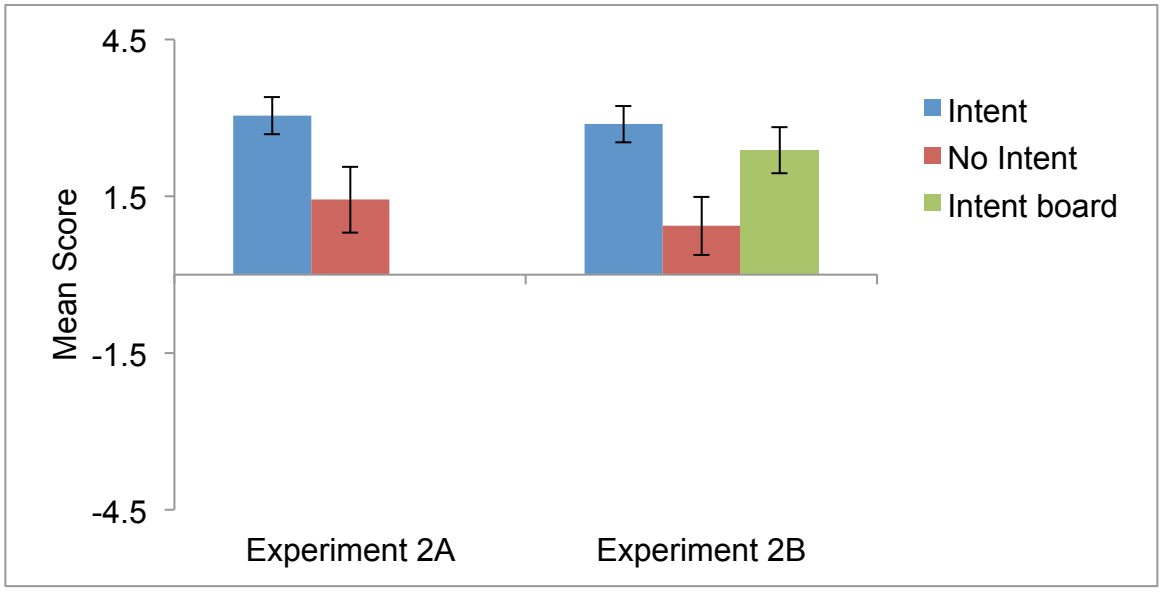
painting/just for the fun of it/to make a painted board]. The paint splatters all over the board. The [painting/painted board] looks surprisingly good. Suddenly, a gust of wind causes the [painting/painted board] to roll down the hill. Mike wants the [painting/painted board].

Another man named Dave is walking at the bottom of the hill. He sees the [painting/painted board] on the ground and picks it up. When Mike reaches the bottom of the hill, they begin to argue about who gets to keep it.

Results and Discussion

If intent matters for creation to bestow ownership, participants should be more likely to side with the Creator when he acted intentionally. A one-way analysis of variance (ANOVA) revealed an overall effect of condition, $F(2, 126) = 4.88$, $MSE = 9.10$, $p = .009$. As shown on the right side of Figure 2, when creation was unintentional, fewer participants (61% of responses, $M = .93$, $SD = 3.68$) sided with the Creator than when he intentionally created either a painting (86% of responses, $M = 2.88$, $SD = 2.25$) or a painted board (79% of responses, $M = 2.38$, $SD = 2.92$), $t(81.6) = 2.04$, $p = .044$, and $t(71.8) = 2.98$, $p = .004$, respectively (corrected for violating Levene's test). Importantly, there was no significant difference in response rates between the intent-to-create and intent-to-modify conditions, $t(83) = .88$, $p = .38$. That is, whether the created object was referred to as a painting or simply a painted board did not influence response rates. This suggests that the difference between intentional and unintentional creation does not depend on differences in how the end product is labelled. These findings address the concern that providing a novel name to the end product (i.e., painting) implies greater value than referring to it as a modification of the original item (i.e., painted board).

Figure 2. Experiment 2. Mean ownership rating scores calculated by multiplying character selection by confidence rating, and subtracting 0.5. Scores range from -4.5 (full support for first possessor) to +4.5 (full support for Creator). Error bars represent one standard error of their respective means.



Experiment 3A

In the previous experiments, the test scenarios stipulated that the creator's efforts led to the creation of a new object. However, it is possible that some participants might not have accepted this. For example, they might have rejected the claim that crushing a can really makes an ashtray. In this view, ownership judgments may simply be influenced by acts of labor rather than by acts of creation per se. The current study explicitly asked participants to indicate how they perceived the end product. That is, do participants infer that the original product has merely been altered, or do they infer that a new product has been created? This study implemented a new setting (i.e., a forest as opposed to a landfill) and a novel, fictitious object (a "torgo shell"). These changes allowed us to explore if the influence of intent extends beyond the context of our previous studies.

Method

Participants. Eighty-six participants (40 males, aged 17-61 years, mean = 33 years, standard deviation = 11 years) were recruited using Crowdflower. An additional 23 participants were excluded from the final analysis for failing comprehension questions.

Materials and Procedure. The current study used stories in which a "torgo shell" was turned into a useful bowl after having a hole punched in it. In the *intent* condition, the agent (Mike) intentionally turned the shell into a bowl. In the *no intent* condition, the shell was also turned into a bowl, but unintentionally. For this experiment, rather than making an ownership judgment, participants were asked to indicate whether Mike truly created a bowl, or actually just modified a torgo shell by breaking it. This question was designed to test whether, despite using the same label to describe the end product in both conditions, participants perceived Mike's actions as leading to a different end result. Participants were assigned to read either the *intent* or

no intent condition. The new key question appeared immediately below each passage: "Below are two statements. Which one best describes what Mike did in the story?" Participants were offered the response options "Mike put a hole in a shell" and "Mike created a bowl." The order of these response choices was randomized. The rest of the survey was structured like the previous experiments (i.e., confidence rating followed by comprehension questions). Text that differed between the two versions is in brackets.

> Deep in a forest, Mike [sees a torgo shell on the ground. Punching a hole into the shell will make it into a useful bowl. Mike wants to do this by knocking down a tree branch, so that it falls onto the torgo shell/spots a decaying tree branch. Mike wants to knock down the tree branch by throwing a rock at it]. Mike picks up a rock and throws it. The rock smashes into the tree branch, causing the branch to fall.
>
> The tree branch hits the torgo shell, punching a large hole into it. The torgo shell is now a perfect bowl. But suddenly a gust of wind causes the bowl to roll away. Mike wants the bowl.
>
> Another man named Dave is walking on a path in the forest. He sees the bowl by the side of the path and picks it up. Mike hurries over, and the two argue about who gets to keep it.

Results and Discussion

If intention is a necessary component of true creation, participants in the *intent* condition should be more likely to agree that "Mike created a bowl." In contrast, participants in the *no-intent* condition should think that Mike modified an existing object, but did not create something new. Alternatively, if simply labelling the end product with a novel name implies true creation,

intent should not influence participant responses across conditions. The same scoring method was applied as in previous experiments (choice multiplied by confidence), however this time responses favoring modification (i.e., shell with hole) were scored as -1, and responses favoring creation (i.e., bowl) were scored as +1. Participants endorsed creation at higher rates in the intent condition (76% of responses, $M = 2.07$, $SD = 3.31$) than in the no-intent condition (45% of responses, $M = -.43$, $SD = 3.87$), $t(77.3) = 3.18$, $p = .002$ (corrected for violating Levene's test). These findings suggest that true creation depends on the intent of the creator. Even though both stories explicitly referred to the end product as a created object, when intent was lacking, participants were less likely to endorse true creation than when intent was specified.

This study demonstrated how intent influences whether actions are perceived as leading to true creation or only to modification of an object. Although this study suggests that intent is necessary for true creation, participants were not asked to provide an ownership judgment. The next study addressed the relation between how the Creator's actions are perceived and how perception of his actions influenced ownership judgments.

Experiment 3B

The goal of the current study was to examine whether the same participants who view the Creator's actions as leading to true creation are also those who grant him ownership. In this study, participants were asked to provide an ownership judgment and to indicate whether they perceived the Creator's actions as leading to true creation or only to modification.

Method

Participants. One hundred and twenty-eight participants (50 males, aged 17-64 years, mean = 36 years, standard deviation = 12 years) were recruited using Crowdflower. An additional 50 participants were excluded from the final analysis for failing comprehension questions.

Materials and procedure. The study design was similar to that of the previous experiment, but now all participants read a story in which an object was unintentionally created. Based on the previous experiments, an unintentional-creation scenario should lead to the highest variation in participant responses with respect to ownership judgments and how the Creator's action is perceived. Participants were randomly assigned to read one of two cover stories. In the "painting" cover story, Mike threw a can of paint at a wooden board just for fun, and ended up creating a painting. In the "bowl" cover story, Mike threw a rock at a tree branch and ended up turning a torgo shell into a bowl by puncturing it. After reading one of the cover stories, each participant received two key questions. The first question was about ownership, and appeared immediately below each passage, followed by a confidence rating on a new screen. Next, participants received the interpretation question (from the previous experiment) on a new screen, also followed by a confidence rating.

Bowl story. Deep in a forest, Mike spots a decaying tree branch. Mike wants to knock down the tree branch by throwing a rock at it. Mike picks up a rock and throws it. The rock smashes into the tree branch, causing the branch to fall.

The tree branch hits a torgo shell, punching a large hole into it. The torgo shell is now a perfect bowl. But suddenly a gust of wind causes the bowl to roll away. Mike wants the bowl.

Another man named Dave is walking on a path in the forest. He sees the bowl by the side of the path and picks it up. Mike hurries over, and the two argue about who gets to keep it.

Painting story. People sometimes visit a local landfill looking for things that can be salvaged and sold. Mike is on a large hill at the landfill. He sees an ugly wooden board. Mike picks up a half empty paint can and throws it at the board just for the fun of it.

The paint splatters all over the board. The painted board is now a surprisingly good painting. Suddenly, a gust of wind causes the painting to roll down the hill. Mike wants the painting.

Another man named Dave is walking at the bottom of the hill. He sees the painting on the ground and picks it up. When Mike reaches the bottom of the hill, they begin to argue about who gets to keep it.

Results and Discussion

If creation influences judgments about ownership, then participants who interpret the story as a true creation event should be more likely to side with the Creator than should those who do not. Put differently, we may expect that those who do not side with the Creator are also

less inclined to view the agent's actions as leading to true creation. Using the same scoring procedure as in previous experiments, we obtained two scores for each participant. This allowed us to examine both the ownership score, ranging from -4.5 (first possessor, Dave) to +4.5 (Creator, Mike), and the creation score, ranging from -4.5 (no creation, or modification-only) to +4.5 (true creation). For each story, ownership judgments were compared for those who chose modification-only (creation score < 0) and those who chose true creation (creation score > 0). For each of these groups, ownership judgment scores were also compared against chance using a one-sample t-test. Results are depicted in Figure 3.

Bowl story. For participants who judged that the object was merely modified (62% of participants, M = -3.39, SD = .86), ownership judgments favored each character equally, M = .16, SD = 3.44, one-sample t-test, $t(37) = .28$, $p = .78$. However, for participants who judged that the object was a true creation (38% of participants, M = 3.33, SD = .83), most granted ownership to the Creator (70% of responses, M = 1.63, SD = 3.61), one-sample t-test, $t(22) = 2.17$, $p = .04$. An independent samples t-test revealed no significant difference between ownership judgments for participants who chose modification and those who chose true creation, $t(59) = -1.59$, $p = .12$[2].

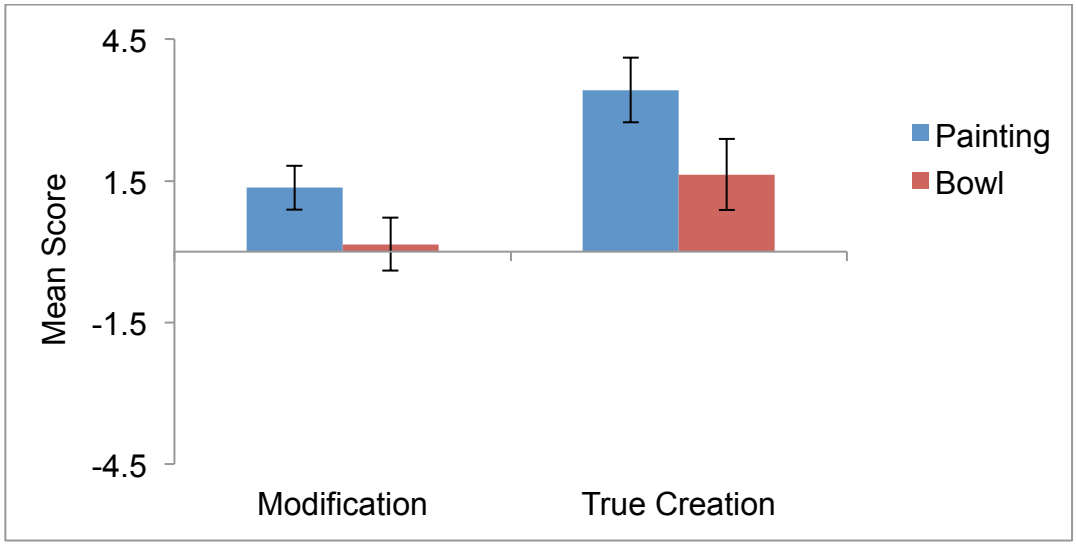
Painting story. The same general pattern was observed in the painting story. However, regardless of whether participants judged the object as being merely modified or being a true creation, both groups sided with the Creator at rates above chance. Participants who judged that the object was merely modified (81% of participants, M = -3.70, SD = 1.00) sided with the Creator over the First Possessor (67% of responses, M = 1.35, SD = 3.39), $t(53) = 2.93$, $p = .005$. Of the 19% of participants who judged that the object was a true creation, 92% favored the

[2] However, a Mann-Whitney U Test revealed that participants who interpreted the Creator's actions as true creation were in fact more likely to grant him ownership than those who viewed his actions as only modification, U= 294, p =.03. This analysis was performed due to the non-normal distributions of participants' ownership and interpretation judgments. The same analysis revealed a significant difference between respondents in the painting condition, U = 192.5, p =.01.

Creator over the First Possessor, $M = 3.42$, $SD = 2.47$, $t(12) = 5.01$, $p < .001$. Although participants who judged the event as mere modification and those who judged the event as true creation both exceeded chance in their ownership judgments, the effect size was much larger in the latter (Cohen's $d = 1.39$) than the former (Cohen's $d = 0.40$), suggesting that creation has a bigger influence on ownership judgments than modification. Finally, an independent samples t-test revealed that participants who chose modification favored the creator at rates higher than those who chose true creation, $t(24.3) = -2.51$, $p = .02$ (corrected for violating Levene's test).

In both stories, participants favored the Creator more when they interpreted his actions as leading to true creation. Put differently, participants showed greater support for the first possessor when the outcomes of the Creator's actions were judged not to be true creation.

Figure 3. Experiment 3B. Mean ownership rating scores calculated by multiplying character selection by confidence rating, minus 0.5. Scores range from -4.5 (full support for first possessor) to +4.5 (full support for Creator). Error bars represent one standard error of their respective means. Participants are divided based on type of story (e.g., about a painting or a bowl being created) and whether they viewed the event as true creation or only modification.



General Discussion

In the present studies, participants granted ownership to agents who succeeded in creating objects. But when creation failed, participants were equally as likely to assign ownership of the objects to another character who took first possession of them (Experiments 1A and 1B). These results suggest that creation establishes ownership, but that ownership is not guaranteed to an agent whose attempt to create is unsuccessful.

Ownership judgments reflected sensitivity not only to the outcome of an agent's actions, but also to the intent underlying the actions[3]. More participants granted ownership to the Creator when he acted intentionally than when his actions were unintentional (Experiments 2A and 2B). Intent also influenced how participants interpreted the outcome of a Creator's actions: When the Creator acted intentionally, participants were more likely to label his actions as true creation. When acting without intent, some participants labelled the Creator's actions as true creation whereas others labelled them as mere modification (Experiment 3A). Put differently, in terms borrowed from work on action identification, participants varied in the levels on which they viewed the Creator's actions (see Vallacher & Wegner, 1987). The level of action identified influenced ownership judgments, such that participants who identified higher levels of action (i.e., viewed the Creator's actions as true creation and not just modification) were more likely to grant him ownership (Experiment 3B).

These findings contrast with the few previous studies examining ownership and creation. In previous studies, adults did not judge that creation transfers ownership from the original owner to the Creator. For example, participants sided with the original owner of a block of wood

[3] It should be noted, however, that as opposed to viewing the Creator's ownership stemming from intent and labor alone, perhaps generating the *idea* to create influenced ownership judgments. In this sense, participants may have granted ownership of the idea to the Creator, and ownership of the end product followed (for example, see Shaw, Li, & Olson, 2012, for ownership of intellectual property).

even after someone else carved it into a valuable statue (Hook, 1993). But in that study, judgments were complicated by the fact that the Creator only borrowed the block of wood; there was no implication that the original owner no longer wanted to keep it. Thus, while revealing that creation is insufficient to transfer ownership, Hook's study was unable to determine whether creation confers ownership for previously non-owned things.

In another previous study, participants exchanged clay animals with an experimenter, and either slightly modified, held, or remodelled the animals into a new shape (Kanngiesser et al., 2010). Although children endorsed a transfer of ownership following the remodelling task, most adults did not. Once again, this differs from the current study in that it deals with the transfer of ownership for previously owned things. Furthermore, it is difficult to know whether children believed ownership was established through remodelling of the clay, or from inferring the experimenter forfeited ownership in giving them permission to completely alter it.

In the one prior study where participants considered a scenario in which labor was performed on non-owned materials, participants did not judge the Creator as the owner (Beggan & Brown, 1994). In this instance, the Creator was likely viewed as having forfeited his right of ownership by abandoning his creation for an extended period of time, without explicitly indicating his desire to own it. Thus, it is difficult to know whether the Creator initially had the right of ownership and then forfeited it, or whether ownership was never conferred by his actions. The current study allowed us to demonstrate that ownership is conferred by creation when the Creator clearly wishes to possess that which he has labored on. Importantly, this study also demonstrates that it is creation per se that establishes ownership, rather than simply owning the materials ahead of time. Labor, not first possession, bestows ownership in such circumstances.

Creation versus possession

Ownership judgments in the current studies resemble those found in previous studies in which agents acquired ownership by laboring to make an inaccessible object available (e.g., by knocking fruit from a tree, dislodging a gem from a cliff, or removing a feather from a cactus; Friedman, 2010; Palamar et al., 2012). In the previous studies, ownership was granted to agents that were necessary for possession—without the agent's actions, the object would not be readily available. In the current study, Creators can also be viewed as necessary for possession because their labor was necessary for bringing an object into existence (e.g., by turning a metal can into an ashtray, a torgo shell into a bowl, or a wooden board into a painting). Thus, the concept of "necessary for possession" also extends to objects that previously did not exist. The influence of intent on ownership judgments is also similar in cases of possession and creation: Participants are far more likely to grant ownership to an agent whose actions are performed intentionally. The similarities between previous findings on possession and the current findings on creation suggest that a general notion of labor could underlie people's ownership judgments.

Alternatively, laboring to create new objects and laboring to make existing objects available might not be regarded in the same way. Intent influences ownership judgments in both domains, but it is influential in *many* other domains as well, including parent-child communication (Fernald, 1989; Grosse, Scott-Phillips, & Tomasello, 2013; Heyman, Sritanyaratana, & Vanderbilt, 2013); humour (Monetta, Grindrod, & Pell, 2009; Perez, 2013; Perks, 2012); consumer behaviour (Sirohi, McLaughlin, & Wittink, 1998); job satisfaction (Hellman, 1997; Lambert, Hogana, & Bartona, 2001); aggression (De Castro, Veerman, Koops, Bosch, & Monshouwer, 2002); legal rulings (Bachman, 2011; Kobick & Knobe, 2009); and moral responsibility (Young & Saxe, 2011). Thus it is premature to conclude that possession and

creation share the same representation based solely on the overlap of a factor that is influential in numerous other domains as well.

Further research should be conducted to identify other factors that might be shared by, or distinguish between, these two forms of labor. For example, previous research on possession found that the difficulty of acquiring something dictates who is judged to own it. If an object is very difficult to acquire, then the first one to do so is judged to own it. However, ownership judgments favor both characters equally when the object is easy to acquire (Friedman, 2010; Palamar et al., 2012). Future studies could investigate whether the difficulty of creating something impacts ownership judgments in the same way.

Another aspect of creation that remains to be explored is causal control. In previous research on possession, ownership judgments favored an agent whose actions were not only intentional, but also accomplished a goal in the manner planned (Palamar et al., 2012). For example, one story involved a character trying to free a feather stuck in a cactus. When the character knocked the feather out of the cactus on purpose, he was judged to own it in a dispute between the agent and another character that picked up the feather first. However, when the feather was freed by accident, ownership judgments were split. This notion of lack of control, or "causal deviance" (Searle, 1983), influences not only ownership judgments, but also whether an agent's actions will be praised or blamed in cases of moral responsibility (Palamar et al., 2012; Pizarro, Uhlmann, & Bloom, 2003). But perhaps causal deviance is less influential in cases involving creation. After all, creation differs from possession in that it results in introducing an object that had not previously existed. It could be that whether causally deviant or not, any action taken by an agent that leads to creation may be sufficient to establish ownership, so long as the agent intends to create in the first place.

In summary, the present research has shown that creation confers ownership for objects made out of non-owned materials. This research highlights the similarities in ownership judgments for cases involving created objects and cases involving existing objects that are made accessible. Furthermore, the current research increases the credibility of the labor account of ownership, broadens our concept of labor itself, and inspires research to further investigate the nature of creation and ownership. Understanding what considerations underlie people's ownership judgments helps us to explore how ownership is conceptualized. These same considerations influence how we think and behave with regards to the multitude of people and objects that we encounter in our everyday lives.

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Appendix- Comprehension Questions

Response options italicized.

Experiment 1A

1. Who saw the can first? *Mike/Dave*

2. In the story, did Mike ever pick up the can? *Yes/No*

3. What was thrown at the can? *A rock/an ashtray/a shovel*

4. Was Mike able to crush the can? *Yes/No*

Experiment 1B

1. Who saw the can first? *Mike/Dave*

2. In the story, did Mike ever pick up the can? *Yes/No*

3. What was thrown at the can? *A rock/an ashtray/a shovel*

4. What happened to the can? *It was crushed/it was dented*

Experiment 2A

1. Who threw the can of paint? *Mike/Dave/nobody*

2. Who was standing on top of the hill? *Mike/Dave/nobody*

3. Did paint spill on the board? *Yes/No/I don't know*

Experiment 2B

1. Who was standing on top of the hill? *Mike/Dave/nobody*

2. What caused the board to roll down the hill? *A gust of wind/Mike pushed it/a landslide*

3. Why did Mike throw paint at the board? *Just for the fun of it/to paint the board***

****Failed responses ignored due to the ambiguity of the question (approximately half of the participants responded "incorrectly" in each condition).

Experiment 3A

1. What did the torgo shell become? *A bowl/an ashtray/a hat*

2. Who picked up the bowl? *Mike/Dave*

3. Where did the story take place? *A forest/a junkyard/a parking lot*

4. What punched a hole in the torgo shell? *A rock/a tree branch*

Experiment 3B

Torgo shell story

1. What did the torgo shell become? *A bowl/an ashtray/a hat*

2. Who picked it up? *Mike/Dave*

3. Where did the story take place? *A forest/a junkyard/a parking lot*

4. What punched a hole in the torgo shell? *A rock/a tree branch*

Wooden board story

1. What did the wooden board become? A painting/a *bowl/ a surf board*

2. Who picked it up? *Mike/Dave*

3. Where did the story take place? A landfill/a *forest/a parking lot*

4. What caused the board to roll down the hill? *A gust of wind/a large rock*